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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,974	01/29/2004	Jacob Scheuer	CIT.PAU.44	4306

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EXAMINER

STEIN, JAMES D

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/766,974

Applicant(s)

SCHEUER ET AL.

Examiner

James D. Stein

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on application filed 1/29/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-12 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 3,4 and 13-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

Thirteen sheets (13) of formal drawings filed on 1/9/04 have been accepted by the Examiner.

Specification

Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

Claim 13 is objected to because of the following informalities: The language in the claim renders it unclear. The examiner believes “, is a combination” should be removed and “which profile” should be replaced with “wherein the profile” in order to remedy the problem.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5, 9-12 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by [USPAT 5,448,581] to Wu et al. ("Wu"), which discloses a related resonator structure.

With regard to claims 1, 11 and 12, fig. 1K of Wu shows a semiconductor resonator structure comprising: a light transmissive substrate; a guiding channel 12 defined in the substrate; and at least two distributed gratings (15, 17) defined in the substrate surrounding the guiding channel 12 by at least two opposing sides of the guiding channel (col. 5 lines 20-21), wherein either the period of each of the gratings or their refractive index or both are not constant (gratings by definition inherently include a longitudinally varying refractive index).

With regard to claim 2, in addition to the rejection of claim 1 previously discussed above, fig. 1K of Wu shows the channel 12 has an external side and an internal side and where the gratings (15, 17) are disposed on the external and internal sides are different. It is noted that the gratings 15 and 17 are second order and first order gratings, respectively (see entire document).

With regard to claim 5, in addition to the rejection of claim 1 previously discussed above, fig. 1K shows the resonator to be circular in shape.

With regard to claim 9, in addition to the rejection of claim 1 previously discussed above, Wu teaches the gratings 15 and 17 to be made from a layer of InGaAsP (col. 5 lines 42-43), which is known to have a dielectric constant of about 12, and is therefore a dielectric material.

With regard to claim 10, in addition to the rejection of claim 1 previously discussed above, waveguiding channel 12 is taught to be an active layer that provides optical gain (see entire document, at least col. 5 lines 20-31).

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With regard to claim 17, in addition to the rejection of claim 12 previously discussed above, the claimed subject matter has been disclosed and discussed above in the rejections of claims 7-8.

With regard to claim 18, in addition to the rejection of claim 12 previously discussed above, fig. 1K of Wu shows a cross-section of a closed guiding channel 12. Figs. 7A and 8 clearly show the closed-loop arrangement of the device.

With regard to claim 19, in addition to the rejection of claim 12 previously discussed above, at least fig. 1K of Wu shows the at least one radial bragg grating (15, 17) comprises a first radial bragg reflector 17 disposed on the external side of the guiding channel 12 and adjacent thereto, and as second reflector 15 disposed on the internal side of the guiding channel and adjacent thereto. It is noted that optical [bragg] gratings and bragg reflectors are interchangeable synonyms describing identical devices.

With regard to claim 20, in addition to the rejection of claim 12 previously discussed above, at least col. 5 lines 20-31 describes pumping the guiding channel 12 with optical energy. Quantum wells 26 generate and inject light into the guiding layer 12, or pump the guiding channel as claimed by applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wu and further in view of [USPAT 6400856] to Chin, which discloses a related elliptical resonator structure. Elliptically shaped resonator structures are well known in the art to be advantageous in providing an extending coupling segment on the sides of the resonator. Furthermore, elliptical resonators can conserve space on a rectangular substrate in either a length or width dimension. At least fig. 2 of Chin shows elliptical resonators coupled to a light source 100 via an extended coupling segment "L" facilitated by the elliptical shape of the resonators. It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the resonator of Wu such that it had an elliptical (oval) shape in order to facilitate coupling of light into or out of the resonator, or to conserve space in either a length or width dimension on the substrate.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu as applied to claims 1 and 2 previously discussed above. Although Wu does not specifically teach that the refractive index of the guiding core is smaller than the surrounding distributed gratings, it would have been obvious at the time of the invention to one of ordinary skill in the art to ensure that this was the case in order to allow the device to function as a resonator, as taught in col. 5 lines 20-31. Otherwise, gratings 15 and 17 would not be able to function so as to direct the light back into the guiding core, as taught.

Allowable Subject Matter

Claims 3, 4, 13-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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With regard to claims 3 and 4, none of the cited prior art discloses or suggests the resonator structure previously described above, wherein the index profile and widths of the gratings determined by the relationships as limited by the claims.

With regard to claims 13-16, none of the cited prior art discloses or suggests the resonator structure previously discussed above, wherein the guiding channel and adjacent radial Bragg reflector form a combination with radial structure, is a combination characterized by a profile of the refractive index, which profile is a periodic function superimposed on a decreasing function of radial position.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: [USPAT 5,159,650] to Nishiwaki et al., which discloses a related optical device.

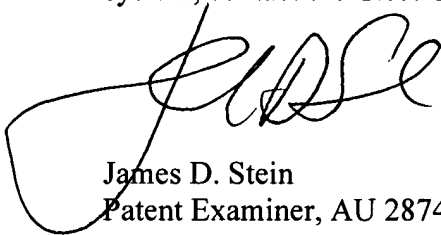
This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Stein whose telephone number is (571) 272-2132. The examiner can normally be reached on M-F (8:00am-4:30pm).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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PRIMARY EXAMINER
12/20/05